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[54] MULTI-LAYER TILED ARRAY

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[58] **Field of Search** 367/140, 153, 367/155, 156, 157, 103, 105, 119, 122, 129; 310/337

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[57] ABSTRACT

A sonar sensor array having a multi-layer tiling arrangement for the individual elements that increases surface area available for each element while maintaining the inter-element spacing required to avoid spatial aliasing when the received signals are combined to form a sonar beam. The array comprises outer and inner arrays of transducer elements for converting an acoustic signal to an electrical response. The transducer elements of the outer array are positioned such than a grid of isolation spaces separates each of the transducer elements. The transducer elements of the inner array are also positioned such that a grid of isolation spaces separates each one of the transducer elements. The electrical response generated by the transducer elements of the inner and outer arrays are coupled to a beamformer which processes the responses to produce an output signal.

14 Claims, 3 Drawing Sheets